

# **ANALYSIS PROTO-FEDERATION DEVELOPMENT**

Briefing to:  
The DMSO High Level Architecture  
Architecture Management Group  
1/24/96

# **The Analysis Proto-Federation**

**JWARS**

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## **The JWARS Prototype**

**GRC International, Mr. Denis Clements**

## **The Alternate JWARS Prototype**

**Los Alamos National Laboratory, Mr. Ray Gordon**

## **The MIDAS Prototype**

**GRC International, Mr. Emmet Beeker**

# **The Analysis Proto-Federation**

**JWARS**

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## **The JWARS Prototype**

**In Development**

**Testing to Begin April, 1996**

## **The Alternate JWARS Prototype**

**In Development**

**Testing to Begin April, 1996**

## **The MIDAS Prototype**

**In Development**

**Testing has Begun**

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## I Testing Lessons Learned

### Permissions Issues:

ok - Loading versus Launching

### Testing (One -Sided):

ok - RTI - Test\_Federate, Same Machine

RTI - MIDAS Federate, Same Machine

RTI - MIDAS Federate, Different Machine

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## RTI Testing Lessons Learned

### Permissions Issues:

**Load Orbix as ROOT**

**Load RTI as ROOT**

**Launch Orbix as USERID1**

**Launch RTI as USERID1**

**Works**

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## RTI Testing Lessons Learned

### Permissions Issues:

**Load Orbix as ROOT**

**Load RTI as ROOT**

**Launch Orbix as ROOT**

**Launch RTI as USERID1**

**Does Not Work**

# Backup Slides

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## Status of FOM Development

- The draft FOM has been developed.
- The FOM will be finalized as JWARS Use-Case 3 is developed, estimated completion is 4/96.
- No changes are recommended for the Object Model Templates at this time.



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## Experience with RTI v0.1

- The RTI is installed.
- No problems were encountered during installation.
- Testing has begun.
- There are no results to report at this time.

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## Status of Federate Development

- JWARS1 (GRCI) is under development.
- JWARS2 (LANL) is under development.
- MIDAS (GRCI) is under development.
- RTI integrated testing has begun.
- Federation testing will begin 4/96.

# The Analysis Proto-Federation

JARS

## Status of Federate Development

Federation testing depends on the development of JARS Use-Case 3.

### Use-Case 1 (C4I/ISR)

Development began 10/95.

### Use-Case 2 (C4I/ISR/Firepower)

Development began this month.

### Use-Case 3 (C4I/ISR/Firepower/Deployment)

Development will begin 2/96. The development of Use-Case 3 will be sufficient for federation testing to begin by 4/96.

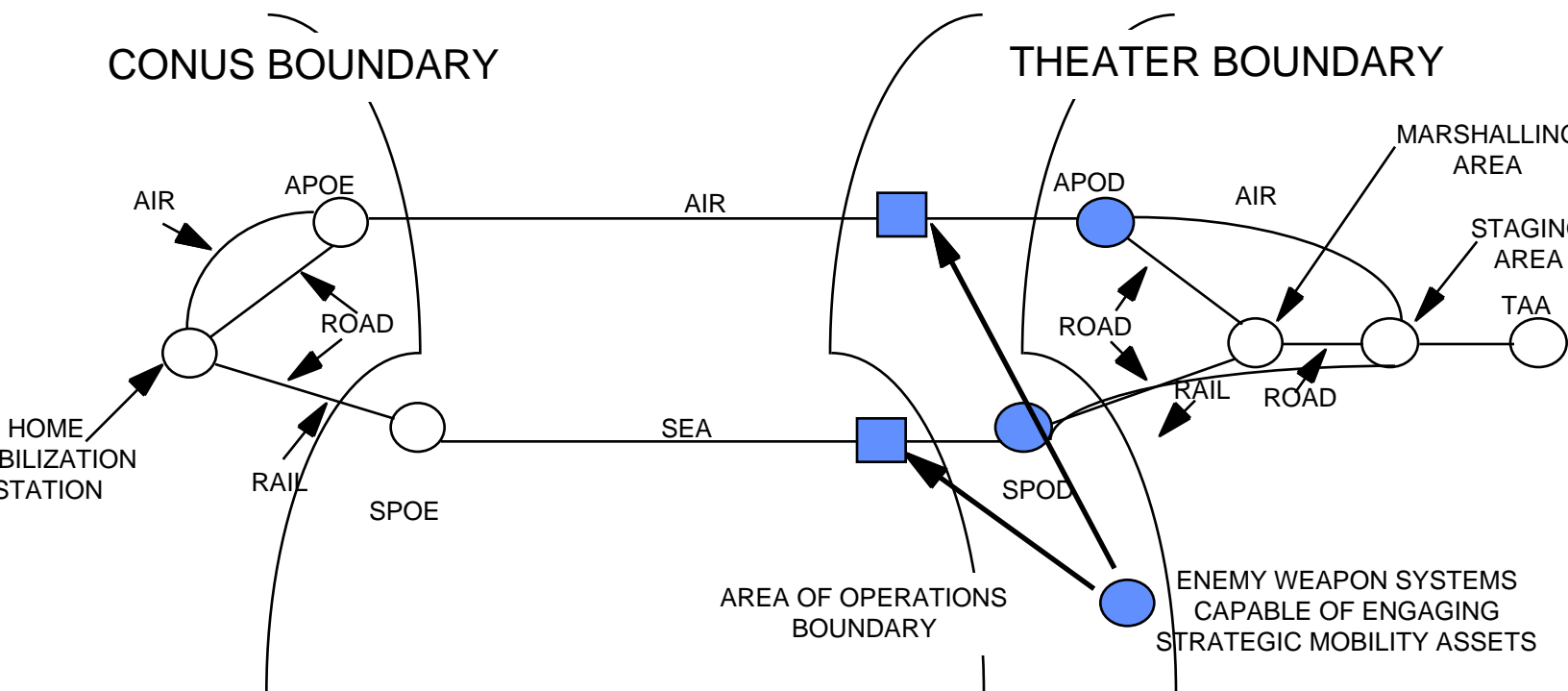
# ANALYSIS PROTO-FEDERATION MISSION SPACE

## JWARS

		JWARS1	JWARS2	MIDAS
1	ISR	X	X	
2	C4I	X	X	
3	FIREPOWER	X	X	
4	MOBILITY	X	X	X
5	LOGISTICS	X	X	X

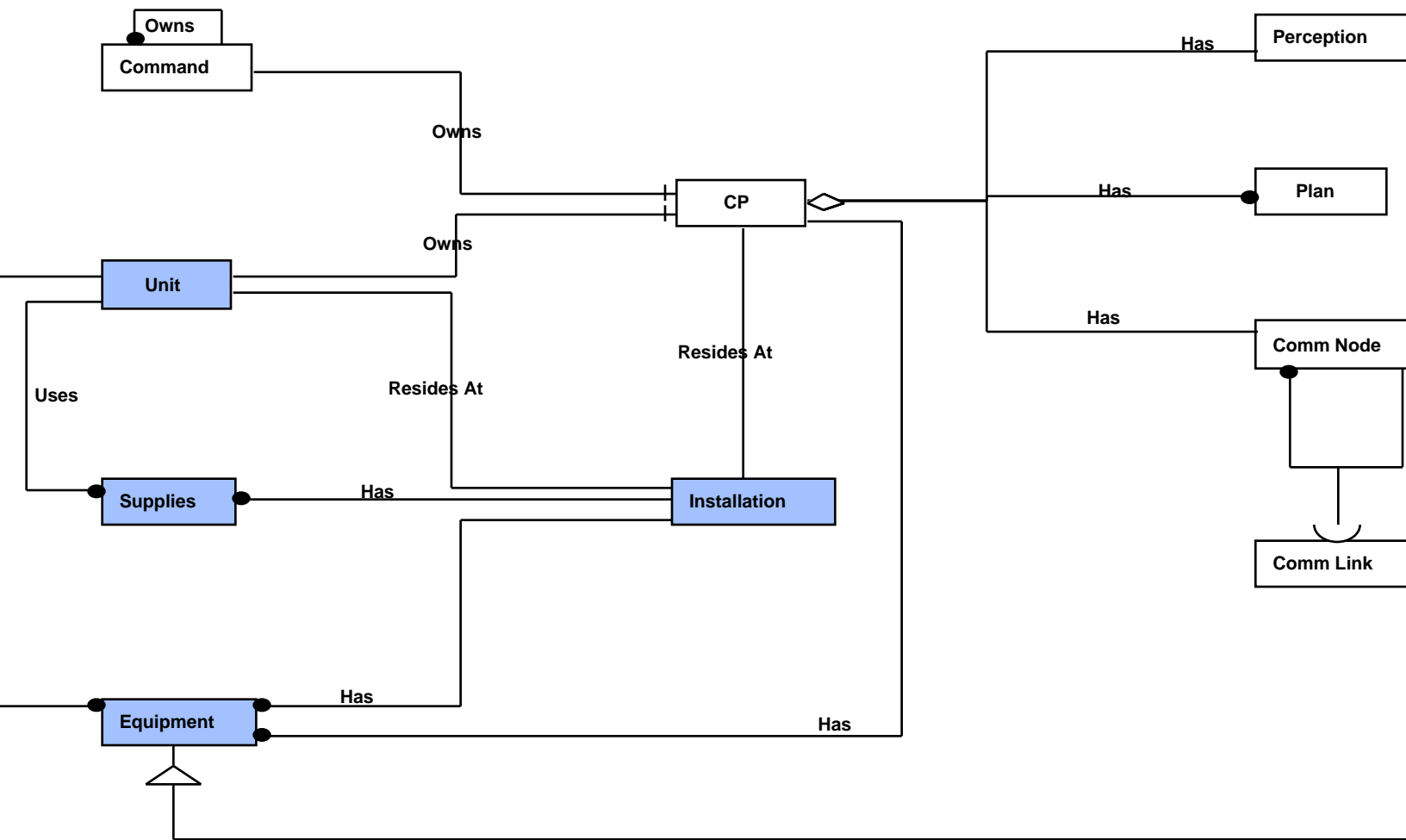
# ANALYSIS PROTO-FEDERATION MISSION SPACE

## ARS



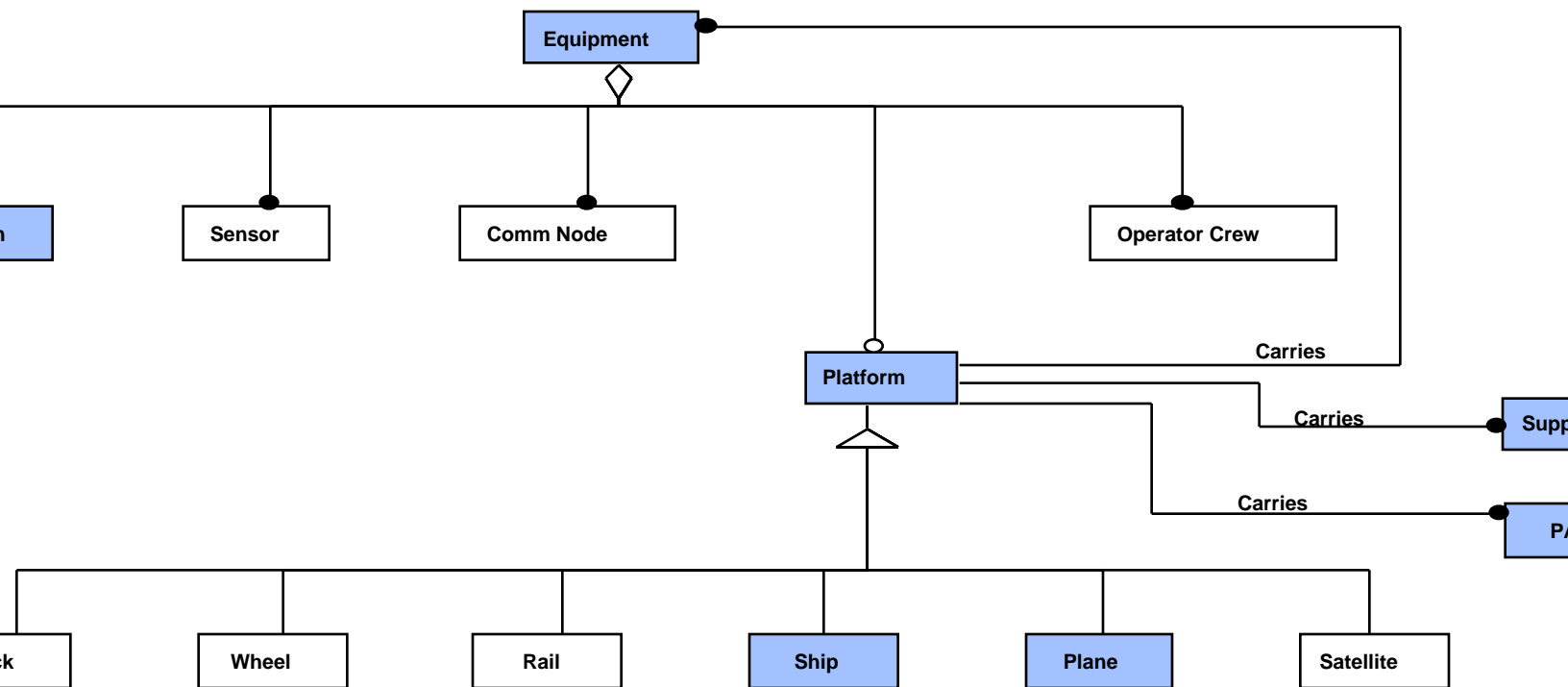
# Command and Control Object Model

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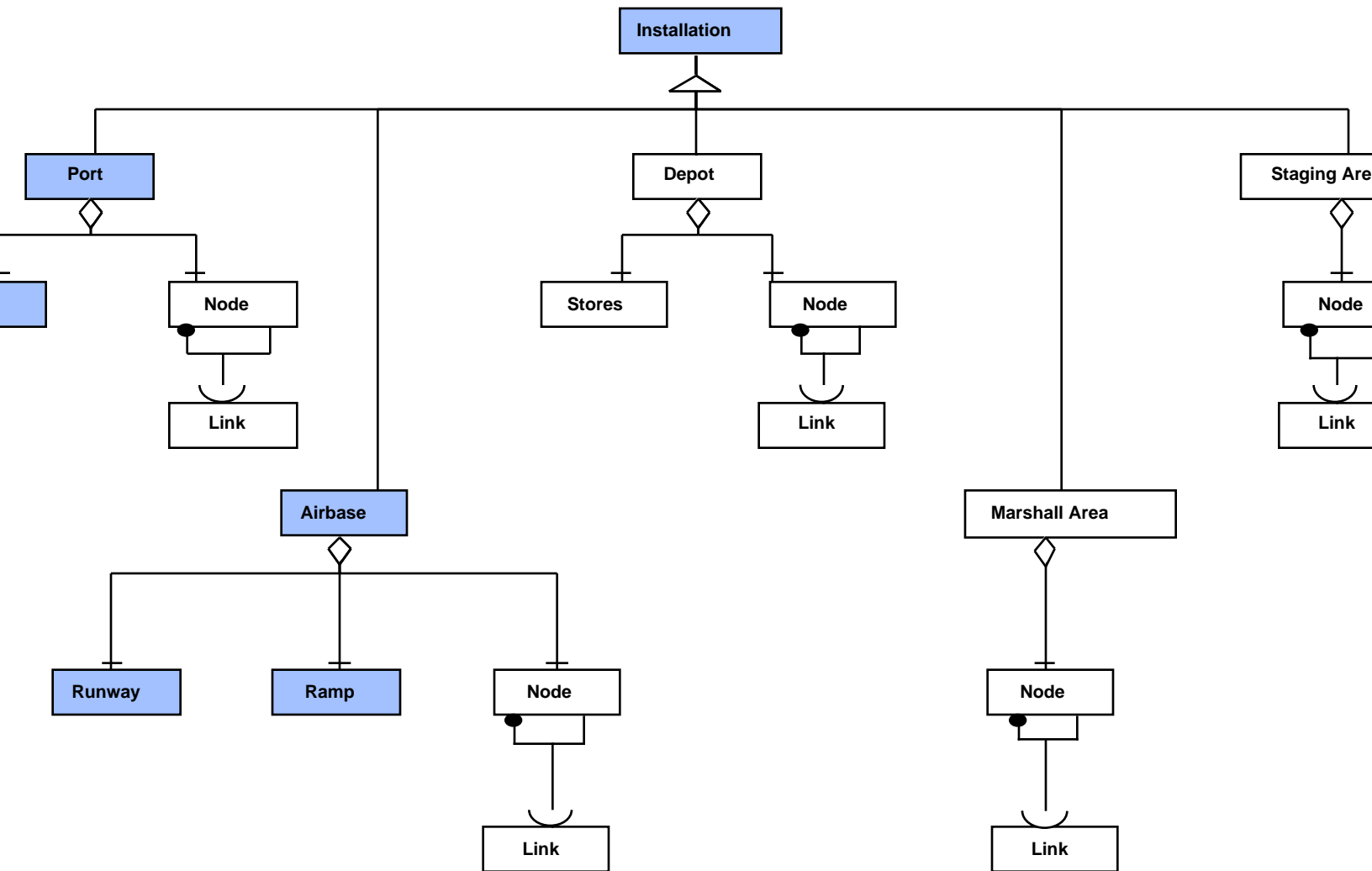
# Equipment / Platform Object Model

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# Installation Object Model

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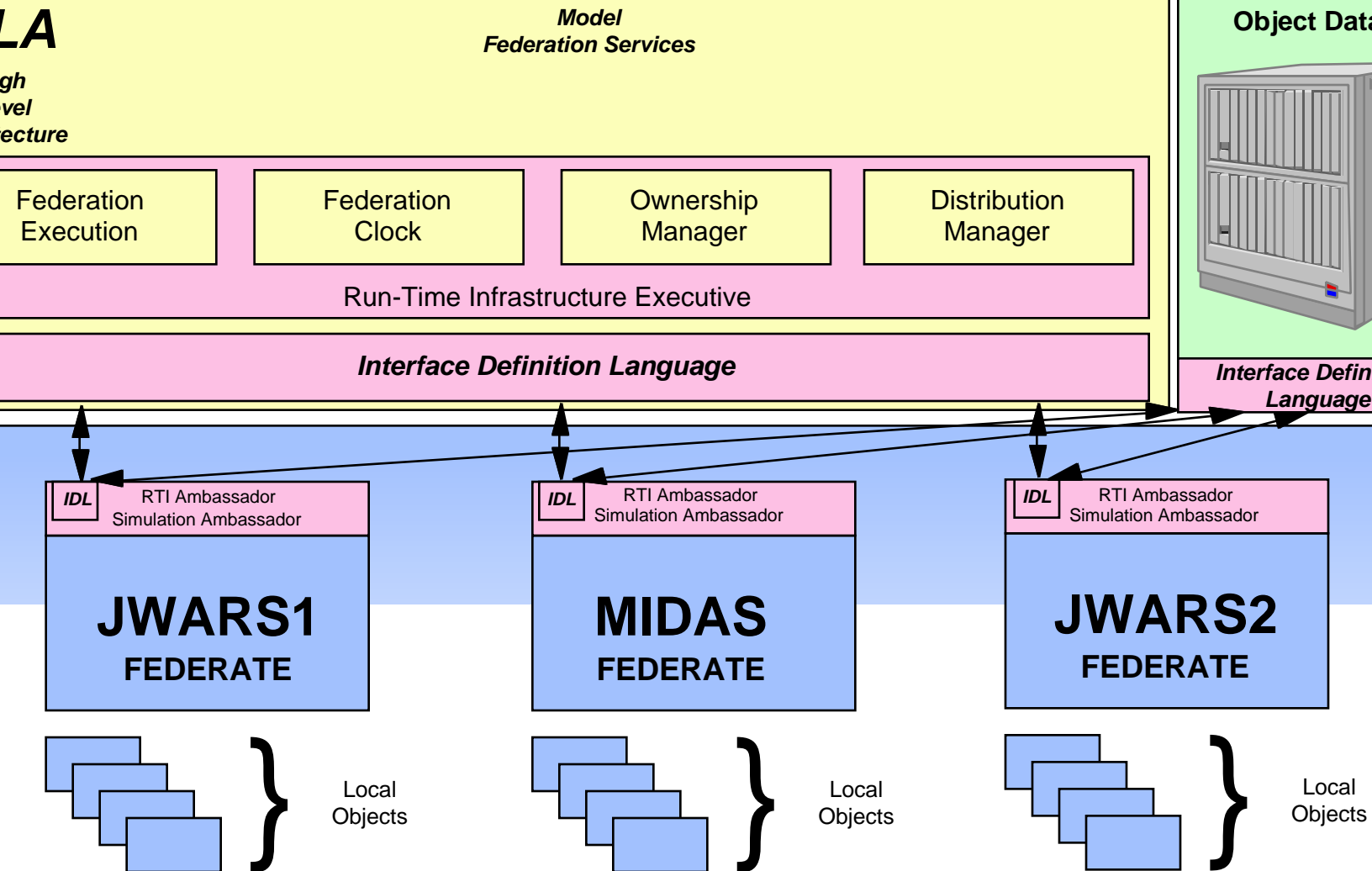




# ANALYSIS PROTO-FEDERATION ARCHITECTURE

## ALTERNATIVE 1

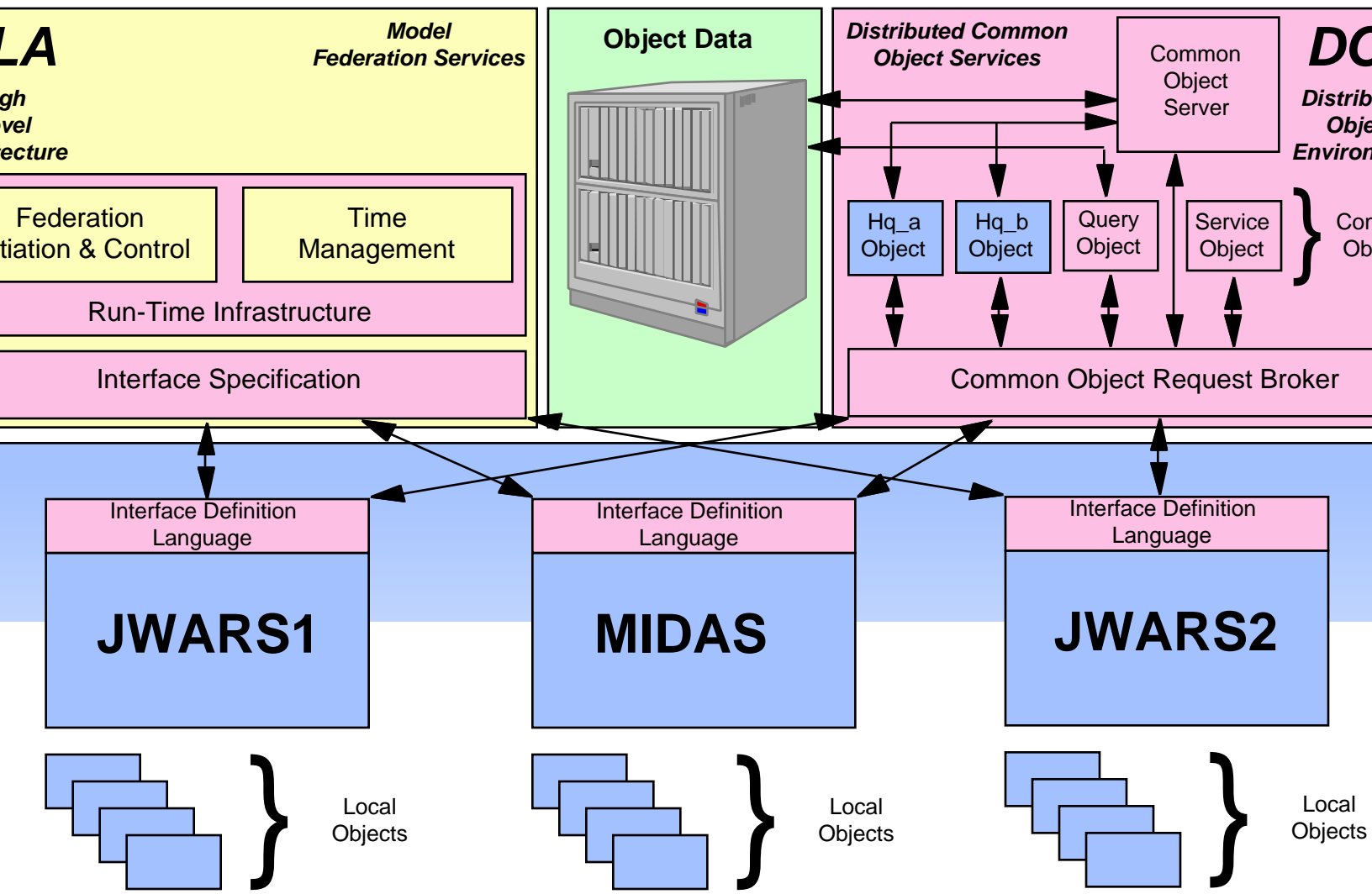
JWARS



# ANALYSIS PROTO- FEDERATION ARCHITECTURE

## ALTERNATIVE 2

JWARS



# ANALYSIS PROTO-FEDERATION SERVICE

## ARS

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- Federation Initiation and Control
- Federation Object Declaration Services
  - Publish, Subscribe, Update
- Federation Object Management Services
  - Instantiate, Delete, Update Values
- Federation Object Ownership Management
  - Acquisition, Divestiture
- Time Management

# Planning For HLA Critical Issues

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- HLA Critical Issues Part Of JWARS Development Planning
- JWARS Team Members Briefed On Critical Issues
- Regular Reviews Of JWARS Experience Related To Issues
- Reporting On Issues To AMG Working Groups
- Reporting On HLA Issues As Part Of Project Deliverables

# Issue Resolution Methodology

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<i>Issue</i>	<i>Method For Issue Resolution</i>			
	Analysis	DI	Test	WG
Issue 1: Single HLA interface specification				✓
Issue 2: Support non-simulation objects		✓	✓	✓
Issue 3: RTI technical feasibility		✓	✓	✓
Issue 4: RTI reusability			✓	✓
Issue 5: RTI portability	✓			✓
Issue 6: RTI variations	✓			✓
Issue 7: Impact of HLA rules		✓		✓
Issue 8: Object Model Template usability		✓		✓
Issue 9: Object model use over federation life	✓			✓
Issue 10: Representation of object models	✓	✓	✓	✓
Issue 11: Testing HLA technical compliance		✓		✓
Issue 12: Testing FOM compliance		✓		✓
Issue 13: HLA range of functionality	✓			✓

# JWARS SCENARIO

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- Current Status
  - Draft is being staffed
  - Will build on an existing scenario
- Planned Development Steps
  - Use Case 1
  - Use Case 2
  - Use Case 3

# JWARS USE CASES

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Use Case 1

- C4I/ISR
- January 1996

Use Case 2

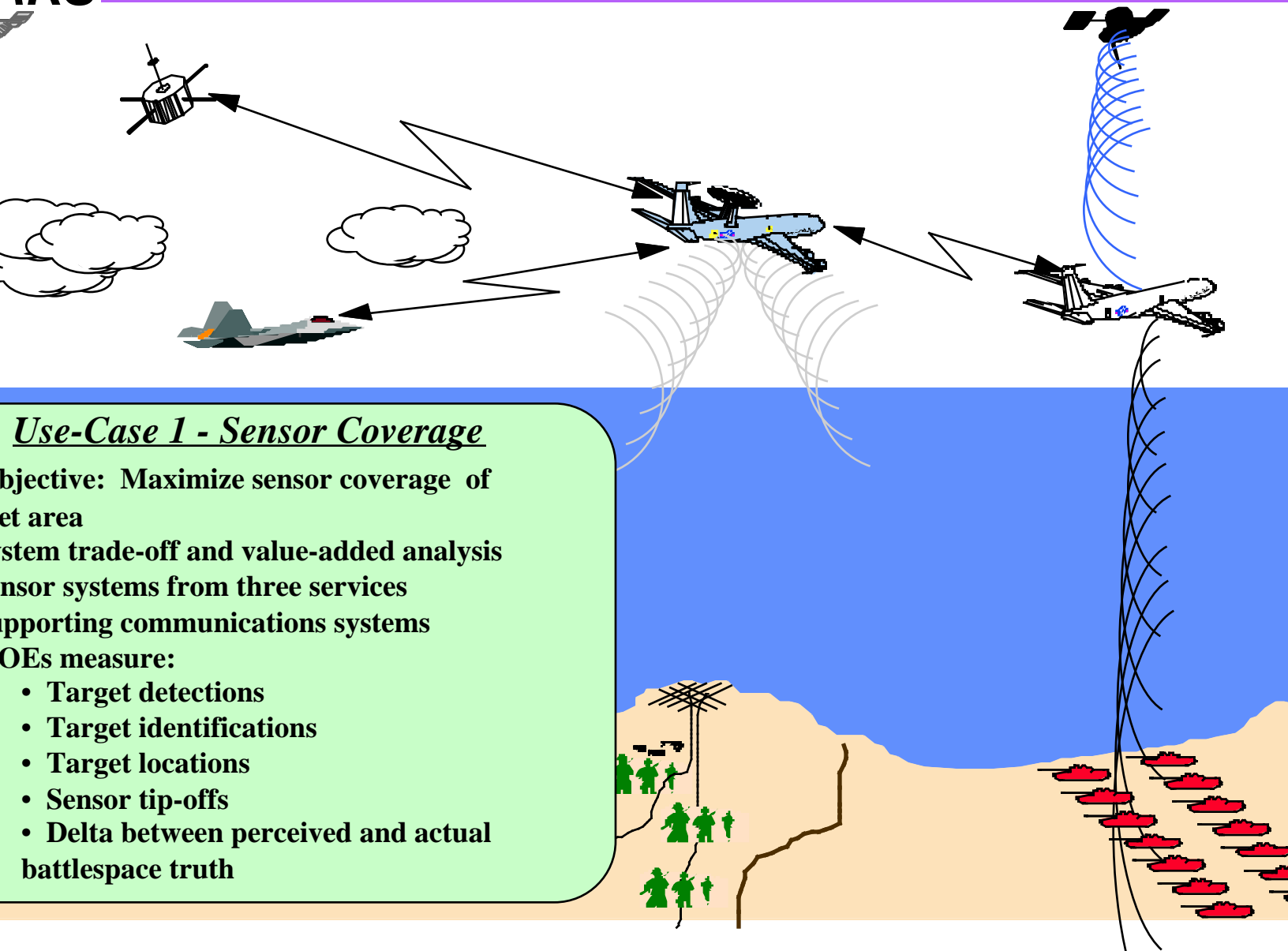
- C4I/ISR/Firepower (HLA Test)
- June 1996

Use Case 3

- C4I/ISR/Firepower/Combat Operations
- September 1996

# JWARS USE CASE 1

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# USE CASE 1, TASK LIST

Case	UJTL #	Task Description & Reference
Deployment/Maneuver Tasks		
	ST 1.1.3	Conduct Intratheater Deployment of Forces (JP 3-02, 3-17, 3-18, 4-01)
	OP 1.5.2	Gain and Maintain Maritime Superiority in Theater of Operations/JOA (JP 3-0)
	TA 1.4.2	Occupy Combat Area (JP 1, 3-0)
Intelligence Tasks		
	ST 2.2.1	Collect Information on Strategic Situation, Geography, Medical Risks, Climate, and Significant Hazards (JP 2-0 Series)
	OP 2.2.1	Collect Information on Enemy Operational Situation and Hazards (JP 2-0 Series)
	TA 2.2.1	Collect Information on Situation (JP 2 Series)
	OP 2.2.2	Collect Information on Operational Targets (JP 2-0 Series)
	TA 2.2.2	Collect Target Information (JP 2 Series)
	ST 2.2.3	Provide for Theater Strategic Reconnaissance and Surveillance (JP 2.0)
	OP 2.2.3	Provide Operational Reconnaissance and Surveillance (JP 3-0)
	TA 2.2.3	Provide Tactical Reconnaissance and Surveillance (No Ref.)
	OP 2.3.1	Evaluate Operation Threat (and Friendly) Information (JP 2-0 Series)
	OP 2.3.3	Integrate Operation Intelligence (JP 2-0 Series)
	OP 2.3.3.2	Develop Operational Target Information (JP 2-0 Series)
	TA 2.3.4	Integrate Intelligence Information (JP 2 Series)
	OP 2.4	Produce Operational Intelligence Reports (JP 2-0 Series)
	TA 2.4	Prepare and Disseminate Intelligence Reports (JP 2 Series, 6-04 Series)
	TA 2.4.1	Prepare Intelligence Reports and Estimates (JP 2 Series, 6-04 Series)
	TA 2.4.2	Convey Intelligence (JP 2 Series, 6-04 Series)
	OP 2.5	Disseminate Operational Intelligence Reports (JP 2 Series, 6-04 Series)

# USE CASE 1, TASK LIST (cont.)

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## Firepower Tasks

<b>OP 3.1.4</b>	Prioritize High Payoff Targets (JP 3-56.1)
<b>OP 3.1.5</b>	Publish Tasking Order(s) for Employment of Operational Firepower (JP 3-56)
<b>OP 3.1.6</b>	Conduct Operational Combat Assessment (JP 3-0, 2-01.1)
<b>TA 3.1.3</b>	Develop Order to Fire JP 3-02, 3-05.3, 3-09 Series, 3-52, 3-55)

## Command And Control Tasks

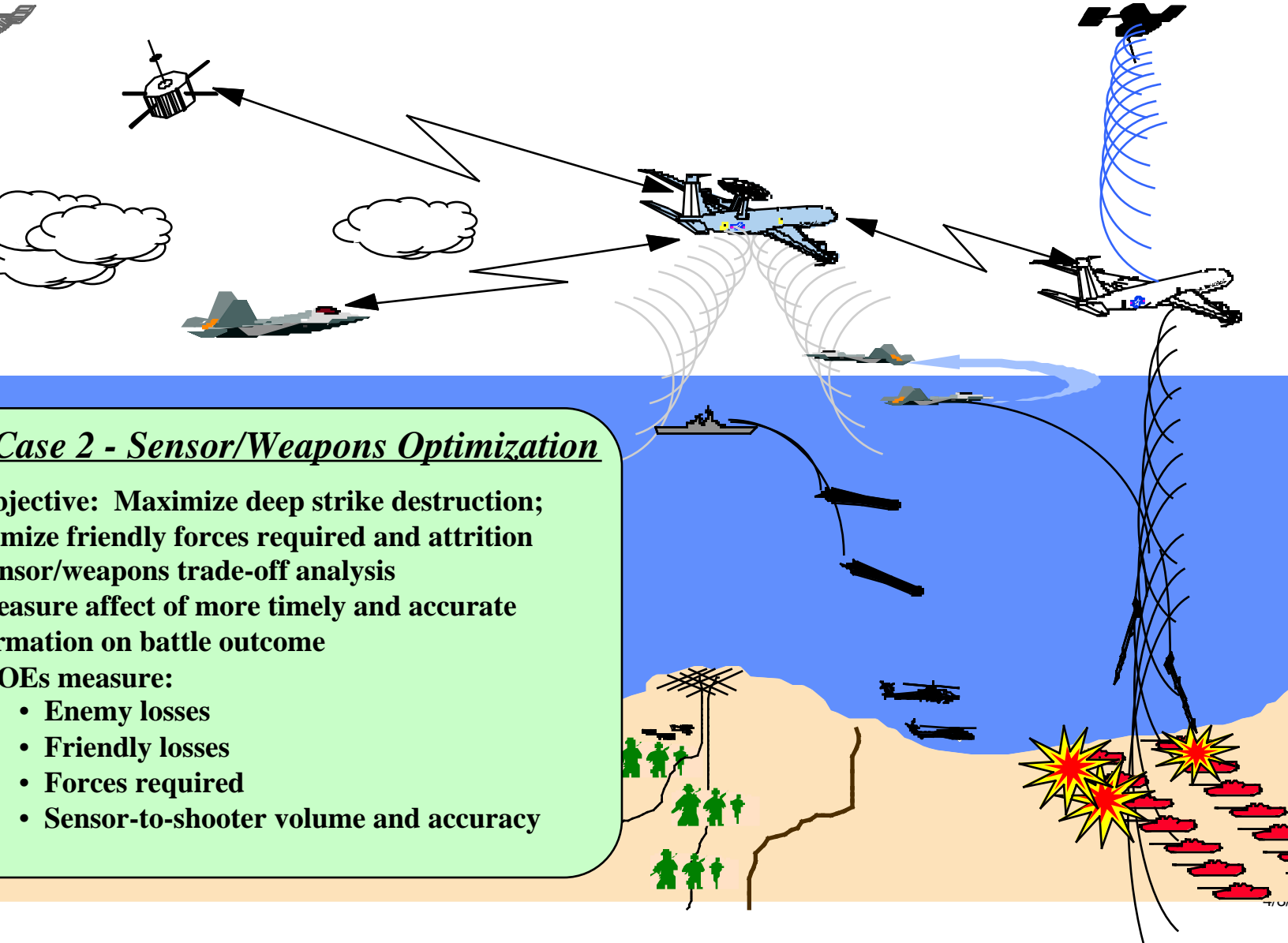
<b>OP 5.1.1</b>	Communicate Operational Information (JP 6-0 Series)
<b>TA 5.1.1</b>	Communicate Information (JP 3-56 Series, 6 Series)
<b>TA 5.2</b>	Assess Situation (JP 0-2, 2-0, 3-0, 3-01.1, 3-10.1, 3-53, 3-55, 5-0, 5-00.2)
<b>TA 5.2.1</b>	Analyze Mission and Current Situation (JP 3-0, 3-05 Series, 3-10.1, 5-0, 5-00.2)
<b>TA 5.3.2</b>	Develop Courses of Action (JP 5-0, 5-00.2, 5-03 Series)
<b>ST 5.4.1</b>	Prepare, Coordinate Theater Strategy, Campaign Plans or Operational Plans and Orders (JP 3-4-0, 5-0, 5-03 Series)
<b>ST 5.4.3</b>	Synchronize Joint Operations and Subordinate Campaign Plans (JP 5-0)
<b>OP 5.4.2</b>	Issue Plans and Orders (JP 3-0, 5-0 Series, 5-03 Series)
<b>OP 5.4.4</b>	Synchronize/Integrate Operations (JP 1, 3-0, 3-03, 3-09)
<b>TA 5.4</b>	Direct and Lead Subordinate Forces (JP 1, 0-2, 3-0, 5-0, 5-00.2, 5-03 Series)
<b>TA 5.4.1</b>	Prepare Plans or Orders (JP 5-0, 5-00.2, 5-03 Series)
<b>TA 5.4.2</b>	Issue Orders JP 5-0, 5-00.2, 5-03 Series)

## Operational/Theater Protection Tasks

<b>ST 6.1.4</b>	Provide for Theater Air Defense (JP 3-01.2, 3-01)
<b>ST 6.1.5</b>	Provide for Theater Missile Defense (JP 3-01.5)

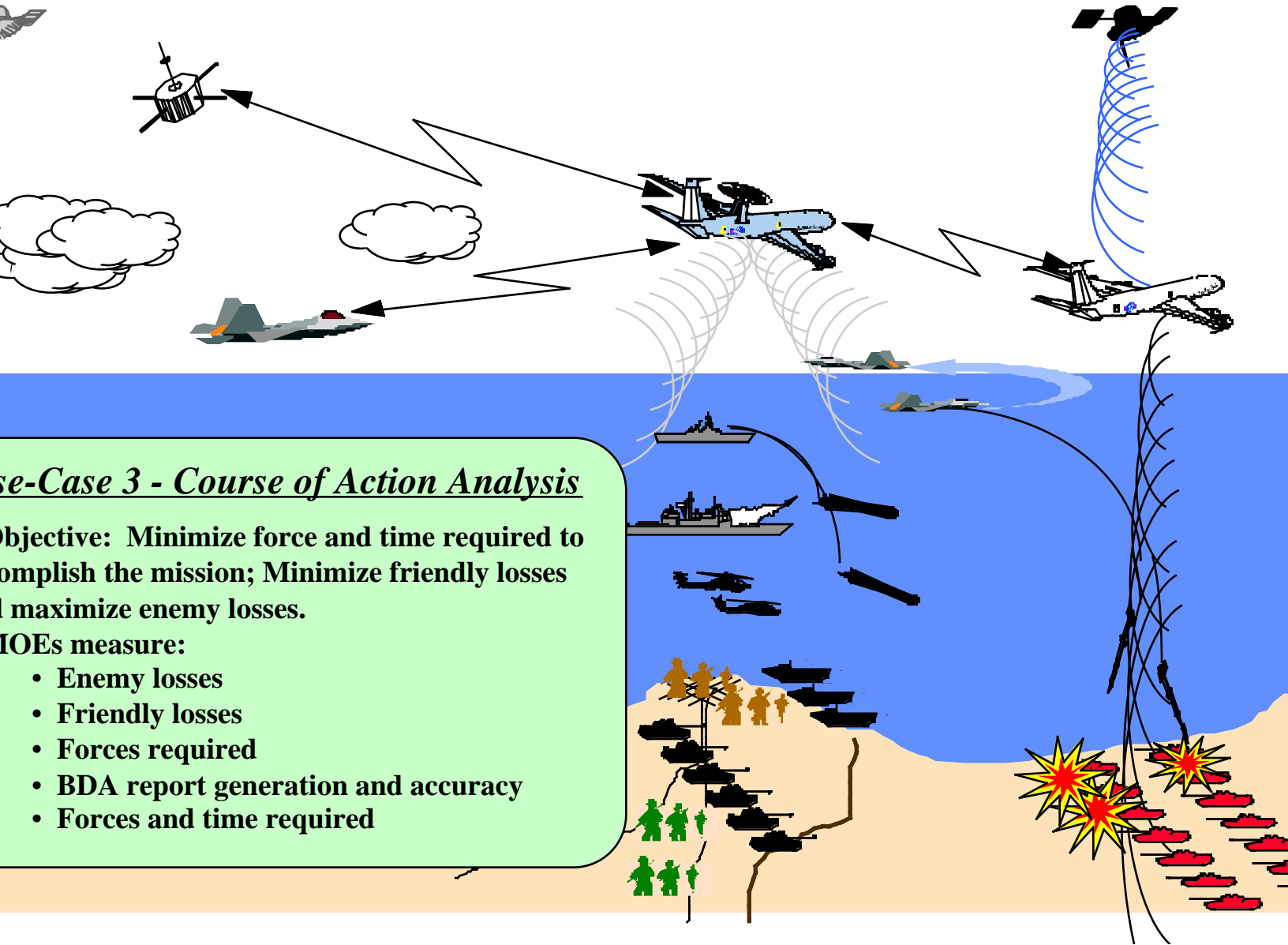
# JWARS USE CASE 2

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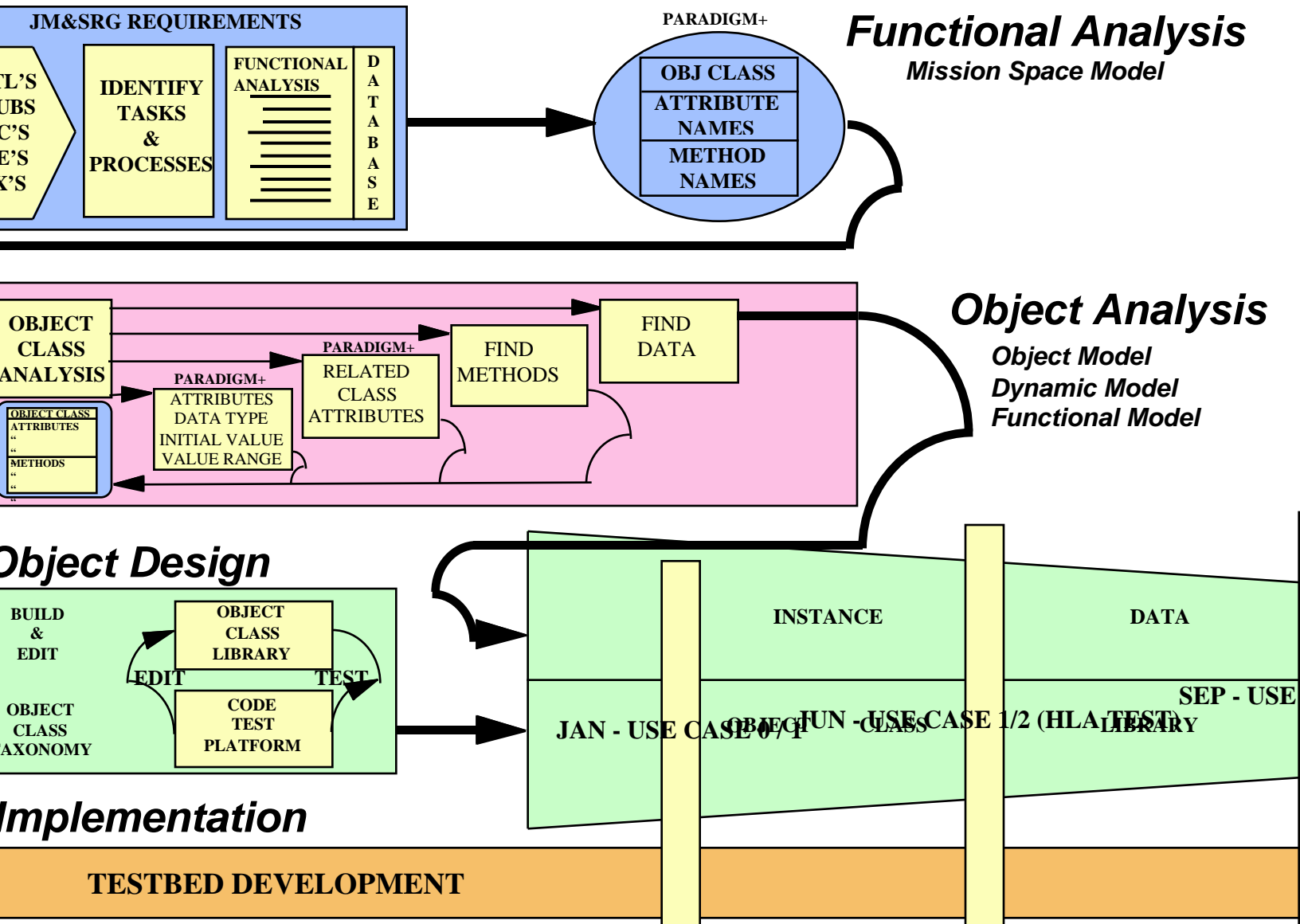
# JWARS USE CASE 3

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# SUMMARY DESCRIPTION OF APPROACH

## PHASES



# JWARS ACTIVITY FLOW DIAGRAM

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